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ABSTRACT

The Porter Elementary School in Syracuse, New York introduced individually prescribed instruction (IPI) for its kindergarten through 6th grade pupils, most of whom came from lower socio-economic backgrounds. Student individual differences relating to social background physical and personality development, intellectual capacity, and school achievement were taken into account before the IPI was implemented. Then, individualized reading, mathematics, and science programs were identified and secured, followed by the training of teachers and support personnel. Next, evaluation procedures were devised and, finally, funding was secured from an ESEA Title III grant to support the project. Posttest data indicated that students who were in the IPI program for at least three years achieved significantly better than those who were not similarly exposed. Teacher attitudes toward the program were generally favorable. It was also found that there were fewer student disciplinary problems, that emotionally disturbed children worked well in the program, and that student attitudes, self-motivation, and independence improved. (PB)

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CITY SCHOOL DISTRICT
Porter Elementary School
512 Emerson Avenue
Syracuse, New York

EVALUATION

INDIVIDUALIZED INSTRUCTION

IN A

PROTOTYPE SCHOOL

Elementary and Secondary Education Act
Title III

S.E.D. Number 637-3
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CITY SCHOOL DISTRICT
Porter Elementary School
Syracuse, New York

INDIVIDUALIZED INSTRUCTION IN A PROTOTYPE SCHOOL

SUMMARY OF FINDINGS

In answer to a questionnaire the Porter Elementary School teachers listed 65 per cent of their positive responses in the area of value to students. They listed 26 per cent of their negative responses in the area of harm to students. Management of and ideas for improving the individually prescribed instruction programs were other areas mentioned frequently by teachers.

In a study that compared the Iowa Basic Skills Scores in reading and mathematics of children in grades three and four, a number of interesting observations were made. The children with three years of experience in the individually prescribed instruction programs had better scores in the May 1971 test than did the children with less than three years of experience in the individually prescribed instruction programs. The children with three years of experience continued to widen the gap between themselves and the other children in four out of six areas, including mathematics and reading. In two areas in 4th grade the children in both groups gained an equal amount.

In two cases the scores on the tests in October 1970 were the same for both groups but the group with three years individually prescribed instruction experience showed more growth in the test given May 1971. This study is just an indication of what might be possible if we could keep children enrolled in individually prescribed instruction programs for three or more years. The 32 per cent enrollment in 3rd grade and the 24 per cent enrollment in the 4th grade by students in the individually prescribed instruction programs for three continuous years points up the problem of mobility that the Porter Elementary School staff faces.

The teachers' positive attitudes and the information presented in the studies leads one to believe that the individually prescribed instruction programs taught at Porter Elementary School are geared to take care of individual differences in pupil accomplishment.

STATEMENT OF THE PROBLEM

Porter Elementary School, situated in the west end of the city of Syracuse, has a student population of approximately 650 children in grades kindergarten through 6th, plus three classes for emotionally disturbed children. The majority of these children, both white and black, come from lower income homes and 35 per cent of them live in one parent homes. All of the 120 black children are bussed into the school from the inner city.

The city schools are heavily populated with children from less favored socio-economic levels. Often they are disadvantaged with respect to attitudes towards school, aspiration for learning, quality of prior schooling, home environment and linguistic development.

With the above mental picture in mind the Porter School teachers identified two major problem areas: the first, individual differences in pupil accomplishment and the second, the lack of teaching materials to implement an individualized program for each child.

Five categories of individual differences in students, as listed below, were discussed by the teachers -

1. Social - socio-economic background, ethnic backgrounds, family, peer group relations
2. Physical - sex, age, weight, height, visual acuity, hearing, motor coordination
3. Capabilities - intelligence, aptitudes
4. Personalities - motivation, attitudes, interest, needs, character traits, emotionality
5. Achievements - in school (social and academic) and out of school (sports and scouts)

STATEMENT OF THE PROBLEM (continued)

The staff decided to revise teaching tactics towards individualized instruction. Reading, mathematics and science were the three areas that were to be individualized. Programs were identified, purchased and newly developed to be used in the three areas identified. The problem became the implementation of the new programs and identifying ways to evaluate them to show if individualization had in fact been beneficial to the individual child.

ATTACKING THE PROBLEM

The major problems of implementation were broken down into the following four parts:

1. Identification of a mathematics, reading, and science program that could be individualized.
2. The training of the teachers, teacher aides, and supervisors.
3. Development of proceedures needed to evaluate the program.
4. The funds to buy the equipment, train the teachers, and pay for the evaluation.

In cooperation with the Eastern Regional Institute for Education (E.R.I.E.) and Pittsburgh University Learning Research and Development Center, Individually Prescribed Instruction in Mathematics (I.P.I. MATH) materials were obtained for Porter School. Instructional items from other sources were obtained, evaluated and incorporated with some modification into the program.

A reading specialist was provided by E.R.I.E. to work with the Porter staff members in developing a comprehensive approach to individualized teaching of reading in the primary grades. Porter teachers, E.R.I.E. staff members, and teacher aides continued to work as committees and teams in reading curriculum development for the intermediate grades and they devised and produced instructional materials and the techniques needed to use them. Cassette recorders, filmstrip projectors, language masters, etc., were bought to be used with the linguistic approach to reading that was being developed. The teachers themselves, prepared many of the cassette tapes used by the children. Some of the reading materials produced by Random House, Harcourt Brace, Scholastic, and Science Resource Associates were incorporated into the Porter Reading Program.

A number of Porter staff members went to a six week institute in Pittsburgh on Individualized Prescribed Instruction. Summer workshops were held for Porter

ATTACKING THE PROBLEM - (continued)

School teachers and teacher aides. Teachers studied the newest developments in technology, the Pittsburgh model for individualizing instruction plus establishing sequences of specified behavioral objectives for early levels of competence in mathematics and reading. Realistic experiences with individualized instruction were gained by the involvement of pupils in the second and third summer workshops.

Inservice training was provided for teachers and teacher aides during the school year. Aides received instruction and practice in preparing instructional materials, working with audiovisual equipment, and practical aspects of pupil testing and record keeping. Guest speakers and training films were used to develop the teachers background in individualized instruction.

The evaluation of the project was to be part of the help provided by E.R.I.E. In regard to evaluation, E.R.I.E. conducted in November 1967, a teacher attitude survey at Porter Elementary School to assess the readiness of the staff for further developmental work in individualizing instruction.

The funding was provided when the Syracuse City School District won approval from the State Education Department of New York and from the Office of Education for an E.S.E.A. Title III Proposal to develop individualized instruction in a prototype elementary school.

Student placement data was collected and put to use after the I.P.I. Placement Test in mathematics and the kindergarten skill tests were given. Iowa Basic Skills, T.O.B.E. and S.R.A. mathematics tests were given to children of Porter School and a sister school, by E.R.I.E. and the Syracuse City School District in the spring of 1970. Data on reading, mathematics and science was collected. The Iowa Basic Skills tests were given in October 1970 and in May 1971 to the 3rd and 4th grade children and were studied by comparing the children who had been in the program three years to those children who had been in the program less than three years.

ATTACKING THE PROBLEM - (continued)

Questionnaires given to Porter Elementary School teachers, visitors, parents, and students have provided pertinent data. Opinions stated in letters from interested people added to the data.

ANALYZING THE DATA (Evaluation)

Evidence on how individualized prescribed instruction effects pupil achievement is still fragmentary. Although limited testing and in-depth pupil observation have indicated remarkable successes, I.P.I. Director Bolvin says, "We'll need three to five years perfecting I.P.I. before we can conduct extensive research comparing I.P.I. pupil achievement with the achievement of similar pupils in the traditional school."

Being interested in how the individual child was helped and not in comparisons between Porter School and traditional schools - we decided to ask 27 teachers two questions:

1. What do you consider the advantages of the individually prescribed instruction program as it now exists at Porter School?
2. What disadvantages have you noted in this program?

From the 27 teachers, 72 responses were given for question one and 50 were given for number two. Listed below are a few representative answers given by the teachers at Porter on the advantages and disadvantages of the individually prescribed instruction programs as they now exist.

ADVANTAGES:

1. Every child finds success since he is working at his own ability level.
2. The program meets the needs of every child no matter what the level of his reading or mathematics.
3. Children can see and measure their own progress.
4. Exceptional children (both extremes) can be given special attention.
5. Child becomes self-motivated, acquires self-discipline.

ANALYZING THE DATA (Evaluation) - (Continued)

DISADVANTAGES:

1. There are certain problems with the I.P.I. mathematics; I find that the program does not provide enough work with counters, measuring devises and other concrete materials.
2. Extra personnel needed makes it an expensive program.
3. Noise level sometimes gets quite high.
4. Lack of prescription writing time to do a good job on the prescriptions.

The responses were studied and then broken into five categories: pupil centered remarks, management remarks, personnel remarks, ideas for improvement, and others. The results of the study are listed below:

	ADVANTAGES	DISADVANTAGES
Pupil Centered Remarks	47	13
Management Remarks	9	12
Personnel Remarks	4	4
Ideas for Improvement	0	15
Others	12	6
	72	50

To reap some measure of the effectiveness of the individually prescribed instruction programs for the children, a study was made using the Iowa Basic Skills Tests. We compared the mean test scores in reading and mathematics of children in grades 3 and 4, who had used the program three years, against the mean test scores of children in the program less than three years. We looked at the difference in the test scores of the two groups, as recorded on the October 1970 and May 1971 test results. The gain represented by each group over a seven month period, minus four weeks of vacation, was studied.

IOWA BASIC SKILLS TEST COMPARISON

Group A - Children using individually prescribed instruction programs for three years

Group B - Children using individually prescribed instruction programs for less than three years.

		October 1970	May 1971	CHANGE
GRADE 3 - I.P.I. Mathematics -				
Group A - 25 children		3.0	3.9	+ .9
Group B - 51 children		2.7	3.4	+ .7
	A - B	.3	.5	+ .2
GRADE 3 - Porter Reading Program - Vocabulary				
Group A - 26 children		2.9	3.4	+ .5
Group B - 51 children		2.9	3.2	+ .3
	A - B	.0	.2	+ .2
GRADE 3 - Porter Reading Program - Reading				
Group A - 26 children		3.0	3.8	+ .8
Group B - 51 children		2.4	3.1	+ .7
	A - B	.6	.7	+ .1
GRADE 4 - I.P.I. Mathematics				
Group A - 21 children		4.1	4.6	+ .5
Group B - 62 children		3.8	4.3	+ .5
	A - B	.3	.3	.0
GRADE 4 - Porter Reading Program - Vocabulary				
Group A - 19 children		3.9	4.4	+ .5
Group B - 64 children		3.5	4.0	+ .5
	A - B	.4	.4	.0
GRADE 4 - Porter Reading Program - Reading				
Group A - 20 children		3.8	4.4	+ .6
Group B - 63 children		3.8	4.0	+ .2
	A - B	.0	.4	+ .4

FINDINGS

The findings listed in this report will come from three sources: study of teacher responses, study of Iowa Basic Skills scores, and from general observations by interested people.

It is interesting to note that 65 per cent of the teachers'responses to the question about advantages of the individually prescribed instruction programs were pupil centered remarks. Most of the comment referred to the ability of the individually prescribed instruction program to handle individual differences in pupil accomplishment.

On the other side of the coin, a question about disadvantages of the individually prescribed instruction programs noted only 26 per cent of the teachers' responses that were pupil centered. It was wonderful to note that the teachers had identified areas in which a few students have trouble with individually prescribed instruction programs.

The 30 per cent of the remarks under the disadvantage question, were suggestions for improving the program. The teacher did identify a number of management problems and 25 per cent of their negative responses were in this area.

One of the most interesting facts brought forth by the Iowa Basic Skills comparison study was the mobility of Porter School's student body. Only 32 per cent of the 3rd grade children have been in the individually prescribed instruction programs for three years. For the 4th grade children the figure is lower - 24 per cent.

Group A children in 3rd grade I.P.I. Math started at grade level and gained nine months in a working six month period. Group B children started below grade level and gained seven months in the same period. Net gain for the Group A children was two months.

Group A and B children in 3rd grade Porter Reading Program (Vocabulary) started just below grade level. However, Group A children gained five months and Group B children gained three months during the period tested. Net gain for the Group A children was two months.

FINDINGS - (continued)

Group A children in 3rd grade Porter Reading Program (Reading) started at grade level and gained eight months in a six month period. Group B children started below grade level and gained seven months. Net gain for the Group A children was one month.

It is to be noted that the Group A children range from two to seven months ahead of Group B children in the 3rd grade.

Group A children in 4th grade I.P.I. Math started at grade level and gained only five months in the testing period. Group B children started below grade level and gained five months also. Net gain for the Group A children - zero.

The same thing happened to Groups A and B in Porter's Reading Program (Vocabulary).

Group A and B children in 4th grade Porter Reading Program (Reading), started just below grade level. However, Group A children gained six months and Group B children gained two months during the six month period covered by the tests. Net gain for Group A - four months. Group A children are three to four months ahead of Group B children in the 4th grade. Group A children in 4th grade had the highest net gain recorded in one area - four months, but the Group A children in the 3rd grade gained in all three areas.

Listed below are findings taken from general observations by interested people:

1. Many discipline problems were elimenated because of low achievers meeting immediate success, some perhaps for the first time.
2. A teacher is rarely found lecturing to a class in math or reading.
3. The children in the three emotionally disturbed classes have had success with the individually prescribed instruction programs.

FINDINGS - (continued)

4. Teachers are working harder in the Porter Individualized Program than they would in other programs but they obtain greater satisfaction since they can meet the challenge of individual differences for each pupil.
5. The teacher is no longer just a disseminator of information. Now she is a diagnostician who will decide on, help produce and get material that will fill the individual needs of her students.
6. The value of the program can be seen in the attitude changes of the students, the increase in self-discipline and responsibility towards learning, in self-direction, self-evaluation and motivation, problem solving and better attendance.
7. Under-achieving children have been transferred from other schools in the city to Porter Elementary School by the school psychiatrist, to work in our individualized program. In most cases there has been noticeable improvement both academically and behaviorally.
8. Teachers have been released from many repetitive presentations.
9. A significant outcome of this program is the observable change in pupil attitudes, self-motivation and independence.
10. The improvement in teacher moral has been observed and commented on by Syracuse public school officials.

CONCLUSIONS AND RECOMMENDATIONS

I.P.I. Mathematics is being used in grades 3rd through 6th. The MINNEMAST Program (coordinated mathematics and science) is being used in grades Kindergarten through 2nd. Porter's Reading Program is being used in grades Kindergarten through 6th. Two individually prescribed instruction programs have been installed, used, tested, and improved upon during the past three years under an E.S.E.A. Title III grant.

One feature of the original plan, an individually prescribed instruction program in science, was modified and a process science program was installed, SCIENCE A PROCESS APPROACH, by the Eastern Regional Institute for Education.

Two science programs are used at Porter Elementary School. SCIENCE A PROCESS APPROACH, is used by the teachers in grades kindergarten through 6th and the MINNEMAST Program is used by the teachers in grades kindergarten through 2nd. Overlapping problems between the two programs have been ironed out.

For a month this summer, July 1971, a team has been working to develop ways to use the individually prescribed instruction programs in the fall, with the assistance of very few teacher aides. Procedures and materials have been developed in three areas: mathematics, reading, and science.

Recommendations for other schools that wish to use or develop individually prescribed instruction materials are listed below:

1. Rewrite existing, published, field tested math levels into behavioral objectives.
2. Use the team approach to plan large and small group instruction.
3. Set up mathematics, science and language resource rooms.
4. Plan for extensive use of instructional media incorporated into resource rooms.
5. Train and use teacher aides.

CONCLUSIONS AND RECOMMENDATIONS - (continued)

6. Set up resources that can be used by students independently to achieve objectives.
7. Develop your own cassette tapes for reading. Don't use reels.
8. Study existing individually prescribed instruction programs for ideas on procedures and student materials.
9. Modify an existing program or develop an individually prescribed instruction program of your own in a subject area of interest.
10. Develop a training program for teachers and teacher aides.
11. Develop a program to educate your parents about the value of individually prescribed instruction programs.

A basic requirement for successful implementation of an individualized instruction program is the training of administrators, teachers and teacher aides. It would be wise to involve the classroom teachers in the development of the individually prescribed instruction curriculum at a very early stage. Remember, individualized instruction depends heavily on the teacher. Her performance must change from the traditional teacher role in many ways.

Curriculum materials must be relevant to the child's interest and include a variety of activities to accommodate different modes of learning. Materials must be organized so that children can learn at their own rate.

The school must have on hand enough hardware to allow students to pursue their work independently. There must be enough software to give each student a good experimental base on which to proceed at his own rate.

A good record keeping system must be developed so that the many forms needed can be kept current for teacher reference. Placement tests, profile sheets, pretests, summary sheets and skill pages are only a few of the forms needed to run an individualized program.

CONCLUSIONS AND RECOMMENDATIONS - (continued)

The school schedule must insure sufficient time for teachers to prepare student prescription sheets. Teachers need to review individual prescription sheets each day so that they can keep a close watch on their students progress.

A few well trained teacher aides are needed to help develop and run individualized programs. They work with small groups of students in the classroom, correct tests and perform other functions demanded by the program.

Time should be scheduled once a week to enable teachers at each grade level to meet and plan together. The planning sessions would give the teachers an opportunity to:

1. Review progress of the students.
2. Organize students who need help in particular units of work.
3. Share instructional problems with other teachers.
4. Continue their study of individualized instruction.
5. Have new materials and equipment introduced to them.

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